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ABSTRACT

After 2 years of a 5-year pilot project to develop approaches to strengthen basic competencies of students enrolled in vocational programs in Oklahoma, two of the projects were reviewed. The study sought to: (1) document the incidence and level of basic skills instruction, along with the teaching methods and materials used, in the vocational and academic classrooms; and (2) assess the perceptions of vocational and nonvocational teachers of the two participating sites. Classroom observations were conducted in 29 classrooms by one observer, using the techniques in "The Dynamics of Secondary Vocational Classrooms" (Weber et al., 1988). Focus groups were conducted for teachers at each site. The results of classroom observation and focus group study indicated that basic academic competencies are being addressed in the vocational and nonvocational classrooms. Applied methodology is becoming a part of academic instruction, and basic skills integration is becoming a part of vocational instruction. Teachers support the project and have noted a number of positive outcomes, such as positive changes in student performance and self-esteem, changes in the ways teachers approach teaching, and increased awareness of and communication among teachers. Finally, there was hope that support would continue to be given to the project. (KC)

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APPLIED ACADEMIC SKILLS IN VOCATIONAL AND NONVOCATIONAL CLASSROOMS:

A Classroom Observation and Focus Group Study

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APPLIED ACADEMIC SKILLS IN VOCATIONAL AND NONVOCATIONAL CLASSROOMS: A Classroom Observation and Focus Group Study

In 1987, two five-year pilot projects began in Oklahoma for the purpose of developing, applying, evaluating, and advancing "approaches that will strengthen the basic competencies -- in communications, mathematics, science, critical thinking, and problem-solving -- of students enrolled in vocational programs." (SREB Review Team Report, 1989) These projects, conducted under the auspices of the Oklahoma Department of Vocational and Technical Education (ODVTE) in cooperation with the Southern Regional Educational Board's (SREB) Vocational Education Consortium, are two of over thirty basic skills pilot projects being conducted in SREB Consortium states.

Two main goals were set forth for the basic skills pilot projects. The first goal was to "strengthen basic competencies of vocational completers." The second was to "improve basic competency curriculum and instruction in secondary schools for vocational completers."

The Oklahoma pilot projects have been in place for two full school years. A multiplicity of approaches are being utilized to assess the impact of the two projects; classroom observation and focus groups were two of the tools used to study the process and progress of the Oklahoma pilot sites towards these goals. Repeated observations in pilot site classrooms provide data on the incorporation of basic academic competencies in pilot site classrooms, as well as the instructional materials and methodologies employed. Focus groups gave insight into the participating teachers' perceptions of the project. The two years of classroom observations and the focus group study have yielded information which has and will continue to impact inservice for those involved in the pilot project, expansion of the project using the most promising practices, and future policy concerning the improvement of vocational completers' basic competencies.

PURPOSE

This study was to (a) document the incidence and level of basic skills instruction, along with the teaching methods and materials utilized, in the vocational and academic classrooms and (b) assess the perceptions of vocational and nonvocational teachers of the two sites participating in an Oklahoma basic skills pilot project. To achieve this purpose, the following questions were posed:

> What is the nature of the basic skills enhancement taking place in pilot site nonvocational and vocational classrooms?
>
> What types of instructional approaches and materials are being utilized in pilot site nonvocational and vocational classrooms?
>
> How do the pilot site teachers perceive the process, progress and impact of the project?

METHODOLOGY

Classroom Observation. The observation methodology employed in this study was based on the observation technique used in *The Dynamics of Secondary Vocational Classrooms* (Weber, et al, 1988). SREB provided a training workshop on the use of the observation technique and the observation instrument to state-designated classroom observers. Following the workshop, an observation schedule was developed for the pilot sites. Two weeks of observations were conducted in each site during each school year (1988-89 and 1989-90), for a total of eight on-site, observer weeks. The researcher/observer contacted each site's coordinator to finalize the arrangements for the observations.

The autumn observations of 29 classrooms were conducted by the single, trained classroom observer in November and December, 1988 and 1989. Classrooms were observed twice during each week. A data entry scheme and an analysis program developed for the observation instruments was utilized, and data was entered on over 330 variables.

Likewise, Spring observations by the same classroom observer took place in March and April, 1989 and 1990. Data from these observations was added to the data set developed during Autumn, 1988. Descriptive statistical analysis of the data was completed after each school year.

Observations were recorded in an observation instrument by components entitled episodes. An episode represents one activity that is occurring in the classroom and may involve one student or the entire class. Several episodes may be occurring simultaneously. During the course of the observations, over 1500 separate episodes were observed.

Of the 29 classrooms visited, eleven (38%) were academic classrooms and eighteen (62%) were vocational classrooms. A total of 371 students were observed. Sixty-two percent (62%) of these students were in vocational classrooms; thirty-eight percent (38%) were in academic classrooms.

Focus Groups. In order to assess the perceptions of teachers involved in the pilot site projects, a modified focus group approach was used. The focus group technique attempts to gain information about a subject by engaging participants in discussion centered around a small number of questions. While specific answers to individual questions are important, what is of most interest are the group dynamics, i.e., the interactions among all members of the group.

Two focus groups, one for teachers from each pilot site, were conducted during May, 1990. Six or seven teachers representing both vocational and nonvocational areas participated in each focus group. A moderator and assistant moderator facilitated each focus group. Each focus group lasted for approximately 1 ½ hours. All participants provided input into the groups.

To guide the discussion, five primary questions were developed for the focus groups. These were: 1) what is your overall assessment of the pilot site project? 2) what works? 3) what have been specific outcomes at the basic skills pilot sites? 4) what would be done differently from here on out? and 5) if someone was starting such a project, what advice would you give them?

RESULTS

Classrooms Observation. Results concerning the type and complexity of basic skills instruction observed, and Weber's national study data are presented in Table 1 (p 4). Several of the more interesting findings included that, after two years in the project, basic skills reinforcement was noted in over 85% of the vocational classrooms observed. However, basic skills as the primary topic of instruction was observed in fewer than 4% of the episodes. Basic skills reinforcement was noted in 98% of the observed nonvocational classrooms, with basic skills as the primary topic of instruction also being observed with much lower frequency.

During 1989-90, simple reading (54%) and simple math (41%) were the skills observed most often in the vocational classroom episodes. Simple writing (72%) and simple reading (71%) were the skills observed most often in the nonvocational classroom episodes. Complex speaking (2%, 1%) and complex writing (1%, 0%) were observed in the fewest of pilot site episodes, both vocational and nonvocational.

The utilization of higher-order thinking skills (problem-solving, critical thinking, evaluation/judgement, etc.) was also seen in over 80% of the vocational classroom observations.

In both the vocational and nonvocational classrooms observed, instruction geared toward the application and/or transfer of the basic skills of science, reading, math, writing, and speaking was noted (Table 2, p 5). Transfer of skills was observed much less often than application of skills for all five basic skills across all pilot site classrooms.

Application of reading skills was observed most often in the vocational classroom episodes (43%); while application of math skills was observed most often in the nonvocational classroom episodes (67%). Observation of transfer was most often seen for math skills in both vocational (19%) and nonvocational (32%) classroom episodes.

Science skills were least often observed in an applied mode, found in 20% of vocational and 28% of nonvocational classroom episodes. The fewest observed episodes of transfer of skills were found for science and writing skills, both observed in 6% of all vocational classroom episodes; and science skills, observed in 4% of the nonvocational classrooms.

Table 1. Basic skills reinforcement in pilot site vocational and nonvocational classrooms

Item		Basis for Sample									
		89-90 State				88-89 State				National	
		Vocational		Nonvocational		Vocational		Nonvocational		Vocational	Nonvocational
		f	%	f	%	f	%	f	%	%	%
1.	Episodes in which one or more basic skills was addressed.	453	85	250	98	484	88	151	98	62	71
2.	Episodes in which simple reading was involved.	290	54	181	71	275	50	104	68	31	38
3.	Episodes in which complex reading was involved.	40	8	47	18	45	8	8	5	7	13
4.	Episodes in which simple math concepts/operations were involved.	218	41	116	45	196	36	66	43	16	12
5.	Episodes in which complex math concepts/operations were involved.	26	5	68	27	40	7	39	25	2	3
6.	Episodes in which simple writing was involved.	203	38	184	72	166	30	83	54	21	36
7.	Episodes in which complex writing was involved.	6	1	0	0	5	1	1	1	2	5
8.	Episodes in which simple speaking was involved.	137	26	104	41	170	31	69	45	21	33
9.	Episodes in which complex speaking was involved.	13	2	2	1	13	2	3	2	3	5
10.	Episodes in which the content area or focal topic is basic skills	20	4	126	49	9	2	81	53	2	-

Table 2. Application and transfer of basic skills, 1989-90

	Skill Taught For:							
	Application				Transfer			
	Vocational		Nonvocational		Vocational		Nonvocational	
Item	f	%	f	%	f	%	f	%
Science Skills	106	20	71	28	33	6	11	4
Reading Skills	229	43	94	37	40	8	22	9
Math Skills	225	42	172	67	99	19	81	32
Writing Skills	129	24	96	38	34	6	19	7
Speaking Skills	115	22	80	31	37	7	12	50

With regard to the materials and methods utilized in pilot site classrooms, a wide variety of instructional approaches were observed in use in both vocational and nonvocational classrooms. Student autonomy and higher order thinking skills were also recurrent components of instruction (see Table 3, p 6). The emphasis was on student-centered, rather than teacher-centered, instruction and active student participation, rather than passive student acquiescence.

Vocational students were more often observed involved in technical practice and physical practice/performance; however, the observations in nonvocational classrooms revealed that, over the two years of observations, they incorporated more and more traditional vocational teaching methods such as hands-on practice, discussion and the use of machines and tools (see Table 4, p 7). The incidence of physical practice/performance in nonvocational classroom episodes increased by 8% from the year one to year two observations. The use of machines and tools, and worksheets was prevalent in over 50% of all the episodes observed (see Table 5, p 8).

Table 3. Instructional Approaches and Practices Used in Oklahoma Pilot Sites' Vocational and Nonvocational Classrooms, 1989-90

Item		Basis for Sample: State				National	
		Vocational		Nonvocational		Vocational	Nonvocational
		f	%	f	%	%	%
1.	**Instructional role of teacher**						
	Proportion of instructionally related episodes in which:						
	(1) teacher was lecturing/ explaining to class	20	4	13	5	13	28
	(2) teacher was leading activities of total class	93	17	87	34	23	46
2.	**Active vs. passive learning**						
	Proportion of instructionally related episodes in which primary interaction was:						
	(1) from student to teacher	69	13	41	16	3	4
	(2) from student to student	209	39	76	30	21	8
	(3) from teacher to student	117	22	82	32	38	57
	Proportion of episodes in which students are working:						
	(1) individually	327	61	116	45	41	19
	(2) in small groups	144	27	59	23	25	8
	(3) in large groups	2	*	5	2	3	6
	(4) as a total class	59	11	76	30	31	66
3.	**Complexity of response required of students**						
	Proportion of instructionally related episodes in which:						
	(1) questions requiring an evaluation or judgment were noted	453	85	205	80	36	47
	(2) students had sizable control in carrying out assigned tasks/activities	431	81	171	67	56	27
	Relative incidence with which higher-order skills were observed	508	95	236	92	42	35

Table 4. Instructional Methodology Used in Oklahoma Pilot Sites' Vocational and Nonvocational Classrooms by Episode, 1989-90

	Basis for Sample					
	State				National	
	Vocational		Nonvocational		Vocational	Nonvocational
Item	f	%	f	%	%	%
(1) audio-visual presentation observed	17	3	16	6	4	7
(2) discussion observed	129	24	120	47	14	24
(3) lecture (listening) observed	20	4	13	5	14	29
(4) demonstration observed	7	1	6	2	6	3
(5) simulation/role playing observed	6	1	2	1	3	1
(6) doing written work observed	154	29	167	65	11	22
(7) doing reading observed	288	54	209	82	7	14
(8) practice/performance-physical	325	61	67	26	52	4
(9) practice/performance-verbal	7	1	11	4	4	5
(10) taking tests observed	37	7	24	9	4	12
(11) preparation for assignments	1	0	2	1	3	2

Focus Groups Study. As the main intent of the focus group technique is to gain a general understanding of where individuals stand on the issues raised in the questions and not to gain specific answers, the responses to the questions overlapped. Four main themes emerged from the discussions. These themes were applied courses, cooperation and communication, outcomes of the project so far, and considerations for this and future projects of this type.

Of the applied courses, the program viewed the most favorably is Applied Mathematics. Teachers spoke highly of the curriculum materials, and indicated that the primary attraction of the course was that direct applicability to the "real world." A typical comment was, "All the years before, and even in my algebra classes now, they say, 'when are we ever going to use this stuff?' After the first week or two in applied math, they don't ask." Concern was voiced that the materials were designed for students with exposure to pre-algebra, and that students without this exposure progressed at a slower pace than intended for the course.

Table 5. Instructional Materials Used in Oklahoma Pilot Sites' Vocational and Nonvocational Classrooms by Episode, 1989-90

Item	Basis for Sample: State — Vocational f	State — Vocational %	State — Nonvocational f	State — Nonvocational %	National — Vocational %	National — Nonvocational %
Proportion of instructionally related episodes which observed the use of:						
(1) textbooks	55	10	21	8	14	32
(2) worksheets	273	51	192	75	25	32
(3) machines/tools	336	63	155	60	50	5
(4) audio visual equipment	16	3	13	5	NA	NA
(5) test	42	8	27	10	NA	NA
(6) chalkboard	22	4	44	17	NA	NA
(7) none	11	2	3	1	NA	NA
(8) other	220	41	56	22	NA	NA

* Percentage is < 1%

Teachers were also generally positive about the Principles of Technology program. Again, the applicability to their lives and the active nature of the program were pluses, and again, several cautions were expressed. The first caution was the difficulty in integrating the course into existing vocational courses; teachers remarked, "I kind of have some mixed emotions. I am still behind it a lot" and "Don't try to lockstep with a pre-existing program, because there is no place to squeeze ...to do justice to the program."

A second caution was the importance of having the correct equipment and the time to familiarize oneself with the laboratory exercises before teaching the course. In sum, one instructor stated, "I'm convinced every day that it is needed, that it's necessary; that it's necessary at the high school level or junior high prior to deciding your vocation."

Applied communications received less than positive comments from the pilot site teachers. The main difficulty expressed was "that's not really English" and "The material was just not applicable to the curriculum that we had to teach" (referring to state required learner outcomes). One recommendation was that the modules be integrated into the appropriate vocational classes.

Within the cooperation/communications theme, teachers indicated a strong need for effective communication among teachers at individual schools; teachers at different schools; teachers and administrators; and the school personnel and the community, including students and parents. A great deal of discussion centered on these topics, bringing out both the positive effects of the project and several needs.

Teachers felt their teaching became stronger as they became aware of the skills being taught in other classes. "It helped me tremendously when we had our meeting at the vo-tech. I had no idea the amount of math they needed in machine shop." In addition to this increased awareness, teachers were available to provide assistance and advice when needed; "It really helps to be able to talk to others doing similar things." Frustration was expressed concerning the lack of time in which to meet and discuss the project with others, and a perceived lack of support from individuals in the administration.

This last point lead to discussion of the importance of consistent communication between the teachers and the administrators involved in the project. Teachers seemed to feel that there was not enough communication between teachers and administrators. "I think probably the administration gets together and talks about what needs to be done and should be done, and they probably meet with the basic skills group and they discuss these and what classes and order the books, and you have it all planned for us, and then we come in and they say, 'this is what we need to do, and here it is.' Well, they haven't asked us, 'will this work?' 'How much time will it take?' and stuff like this."

Regardless, the teachers saw themselves as the prime movers of the basic skills project. As one instructor stated after a lengthy discussion on communication, "I hate to say this, guys, but what it's going to amount to is that teachers are going to have to take the horn by the bulls. I meant that the exact way I said it. I think if we don't do it, it probably won't get done."

Communication with the students, parents and community was also stressed; the general feeling was that the community needed to be made more aware of the project. One teacher stated, "I think we're a little behind on selling the community." Another teacher emphasized the need to make parents aware of the importance of basic skills by relating, "When students come out here, in some cases, they don't feel they have to use proper grammar, and if we try to grade them on it, them we have these parents calling us, 'This is not an English class. Why are you correcting my daughter's work?'"

With regard to outcomes, members of each group stressed that it is too early to determine the full effects of the basic skills projects. "I'm not sure we've been involved in it long enough to see what kind of impact or changes made here have on our program." However, a number of changes were noted by the group members. Most frequently, group members cited the changes in students, the increased communication among teachers and the personal changes in teaching style, view of basic skills or view of vocational education.

Many stories were related telling of students who "blossomed" both academically and personally; "Once they can do it, and see they can do it, all of a sudden there's a turn-around. They know they're capable." Group members also noted positive changes in class attendance and behavior problems. "Since I've been teaching the applied math as opposed to the general math, I do not have near the discipline problems I had before, because they're always busy and they're working with their groups and concerned about getting along with those other kids." Other comments included that, "...in general my attendance rates are much higher...Overall I see the kids becoming more active and less discipline problems..."

A number of considerations for the future of this project and future projects of this type were raised. Three main areas of advice were given: basic skills enhancement needs to begin very early, before students are juniors and seniors in high school; teachers need to communicate often and effectively with one another; and teachers should take advantage of workshops and others who can help.

Again, communication was of utmost importance. One teacher stated, "We've got to start doing this. General ed and the vo-tech systems and even our area are going to have to buy into this, too. We're going to have to start working together. We're going to get eaten alive if we don't." Another consideration voiced strongly in both groups was the need for vocational and non-vocational teachers to become more aware of the skills taught in each other's classes.

DISCUSSION

The outcomes of these activities, in addition to assessing the project's impact, provided site leaders with decision-making information for future inservice activities, for expansion of the project using the most promising practices, and for statewide policy concerning improving the basic competencies of vocational completers.

Classroom Observations Study. The results from the two years of the classroom observation study indicate that basic academic competencies are being addressed in the vocational and nonvocational pilot site classrooms. Over the two years of observations, episodes incorporating individual basic skills increased, on a percentage basis, for all basic skills being observed except speaking skills. Not only were basic skills being addressed during the observations, simple skills were observed from 5% to 36% more frequently in both the vocational and nonvocational pilot site classrooms than in the 1988 Weber study. Both vocational and nonvocational classrooms in Oklahoma were observed to have a higher incidence of basic skills reinforcement than in Weber's study.

Vocational classroom episodes had a high incidence of basic skills involvement (85%) coupled with a low incidence of focused basic skills instruction (4%), indicating that basic skills are integrated into the course of normal vocational instruction in the pilot site vocational classrooms. This difference between the basic skills reinforcement and basic

skills instruction observed may indicate the degree to which teachers are incorporating basic skills in less direct, but equally as important, ways into their vocational instruction.

Applied basic skills instruction (science, reading, math, writing, or speaking) was observed in at least one third of the nonvocational classroom; nonvocational classrooms were the target of most of the Applied Mathematics, Applied Communications and Principles of Technology programs. Applied math programs appear to be particularly effective to this point in the pilot project, being observed in a transfer mode in a substantially higher percentage of vocational and nonvocational classroom episodes.

While the instructional practices and approaches found in the 1989-90 observations were generally consistent with the practices and approaches in the 1988-89 observations, a few differences did emerge. Nonvocational classroom episodes incorporated a lesser percentage of teacher-to-student interactions (down 10%), and a higher percentage of machine and tool usage (up 27%). Student-to-student interactions also dropped by 24% between the 1988-89 and 1989-90 nonvocational classroom episodes. In vocational classroom episodes, the incidence of student-to-student interactions increase slightly (2%) and the usage of machines and tools dropped slightly (5%).

Focus Groups Study. A number of positive outcomes of the pilot site projects can be identified. These outcomes include the positive changes in student performance and self-esteem, the changes which individual teachers have experienced in the manner in which they approach basic skills and teaching in general, and the increased awareness of and communication among teachers.

While enhanced communication was identified as a positive outcome of the project, it was also seen as the greatest need. An important goal for teachers is to communicate more effectively with one another, with administrators, with personnel at the Oklahoma Department of Vocational and Technical Education, and members of the local communities.

Teachers were aware that increased communication would take more time. They would like to develop methods for allowing communication without adding to their already overburdened schedules.

In spite of the frustrations experienced in the two years of the basic skills project, each of the group members made an overall positive assessment of the process and outcomes so far.

CONCLUSIONS

The results from the two years of the classroom observation study and the focus group study indicate that basic academic competencies are being addressed in the vocational and nonvocational pilot site classrooms. Applied methodology is becoming a part of academic instruction, and acknowledged basic skills integration is becoming a part of vocational instruction.

Basic academic competencies are being addressed in the observed vocational and nonvocational pilot site classrooms with higher incidence that in the national study. The teaching methodologies employed in the observed vocational classrooms were noted to be more student-centered than those observed in the academic classrooms. The difference between the basic skills reinforcement and basic skills instruction observed in the vocational and nonvocational classrooms may indicate the degree to which teachers are incorporating basic skills in less direct, but equally as important, ways into their vocational instruction.

Teachers support the project and have noted a number of positive outcomes. These outcomes include positive changes in student performance and self-esteem, the changes which individual teachers have experienced in the manner in which they approach basic skills and teaching in general, and the increased awareness of and communication among teachers.

The biggest concerns at this point are that support continue to be given to the activities, materials and instructional approaches being incorporated through this project, that the projects be allowed to develop, and that increased communication between all parties involved become a focal point.

As for the value of this information, it has been and can be used to sensitize pilot site staff (as a group) to what they are doing in support of basic skills, and to further identify areas in which additional support/inservice is warranted. Data can also be utilized in the creation of pilot site profiles which would describe Oklahoma's sites to other states involved in the SREB project, and provide others who are considering this type of projects with some insight into the start-up and operation of an involved basic skills project.

Although the effectiveness of the basic skills instruction cannot be determined from these data, the emphasis on strengthening basic competencies appears to be impacting instruction. One final thought, as stated by a focus group participant, sums up the themes running through both studies; "Those students are learning skills that they're going to take out into the work force. It has also given those kids a lot of success."